THE QUALITY OF ESTIMATES FROM THE AMERICAN COMMUNITY SURVEY FOR SMALL POPULATION GROUPS

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U S C E N S U S B U R E A U

Issues and Concerns

- ACS Sample Size
- Interpretation of Multi –year Averages
- Reliability of ACS Estimates due to Sample Design Differences
- Are Small Samples Representative?

Census Long Form and American Community Survey

- American Community Survey will replace the 2010 long form
- Topics mandated or required by federal law

American Community Survey Design (starting 2005)

- Annual sample of 3 million addresses
- A new panel each month
- Mail with telephone follow-up
- Personal follow-up of a one-third sample
- Use of differential sampling based on size
- Over-sampling low mail response areas

Data Products to Replace Long Form

- 5 year averages starting 2010
  - replace census summary files
  - typical standard errors are larger than corresponding long form standard errors
  - updated each year

Other Data Products

- Annual averages published for areas of 65,000+ population
- 3 year averages for 20,000+
- Annual averages for smaller areas released for “research purposes”
- Public Use Files (PUMS)

American Community Survey and the Inter-Censal Estimates

- ACS is a continuous source of information for updating the Population Estimates
- Will provide some information on county-to county migration
- Improvements will be achieved for all major race and ethnic groups listed on the census short form

Weighting and Population Controls

- American Community Survey can provide more race and detail than the intercensal population estimates
- American Community Survey will improve the quality of demographic estimates

Issues About Sample Size

- Small Area or Small Population Group
  - 400 People
  - Group of People with a Specific Characteristic
  - People who use a Language Other than English at Home
  - Relatively High Standard Error

Question 1

What is the Impact of Having a Smaller ACS Sample?

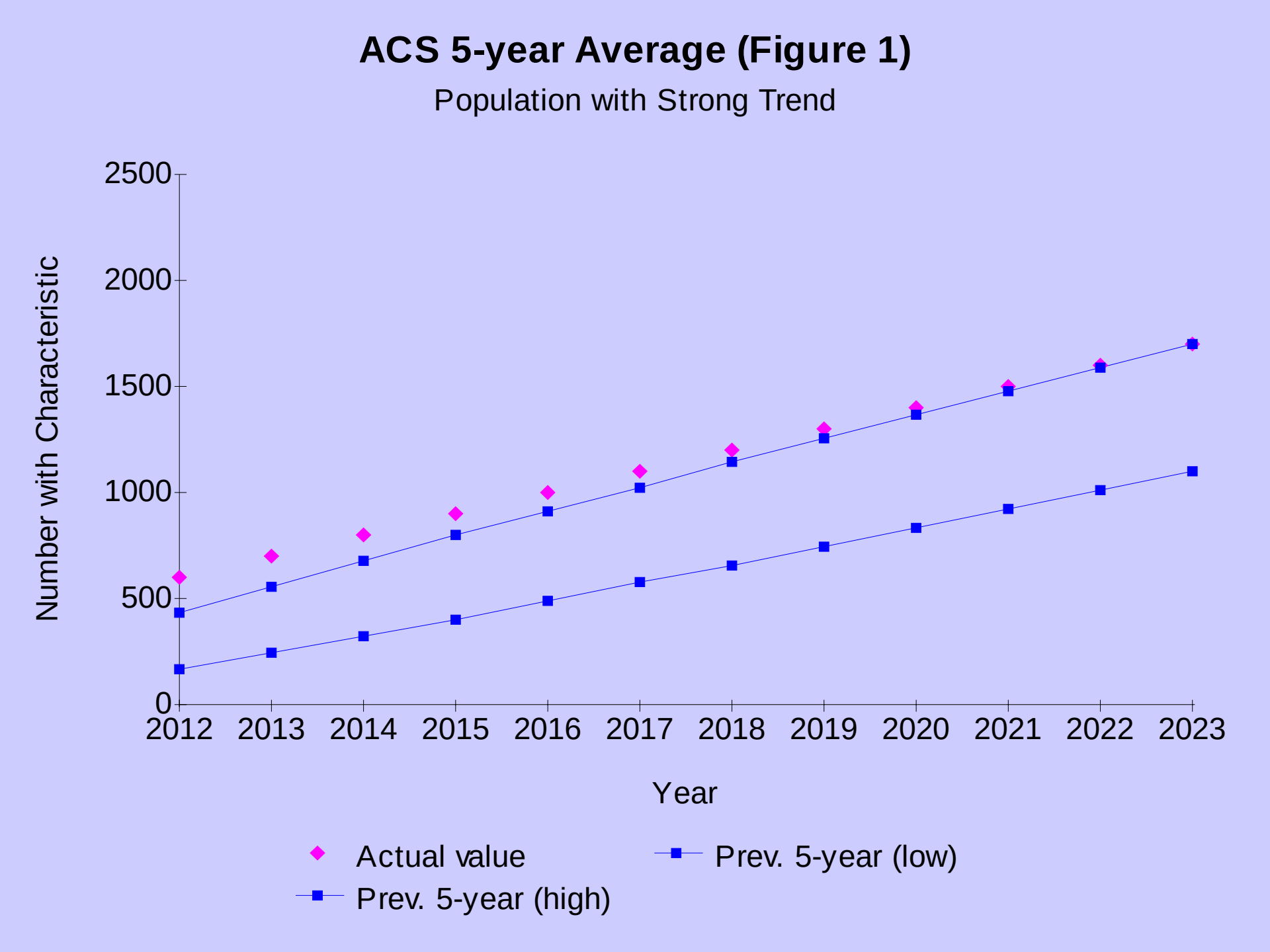
- Larger Standard Errors
- Larger Confidence Intervals
- Data may be too noisy for some uses but adequate for other purposes.

Effect on Margin of Error

What is the Impact of Having a Smaller ACS Sample?

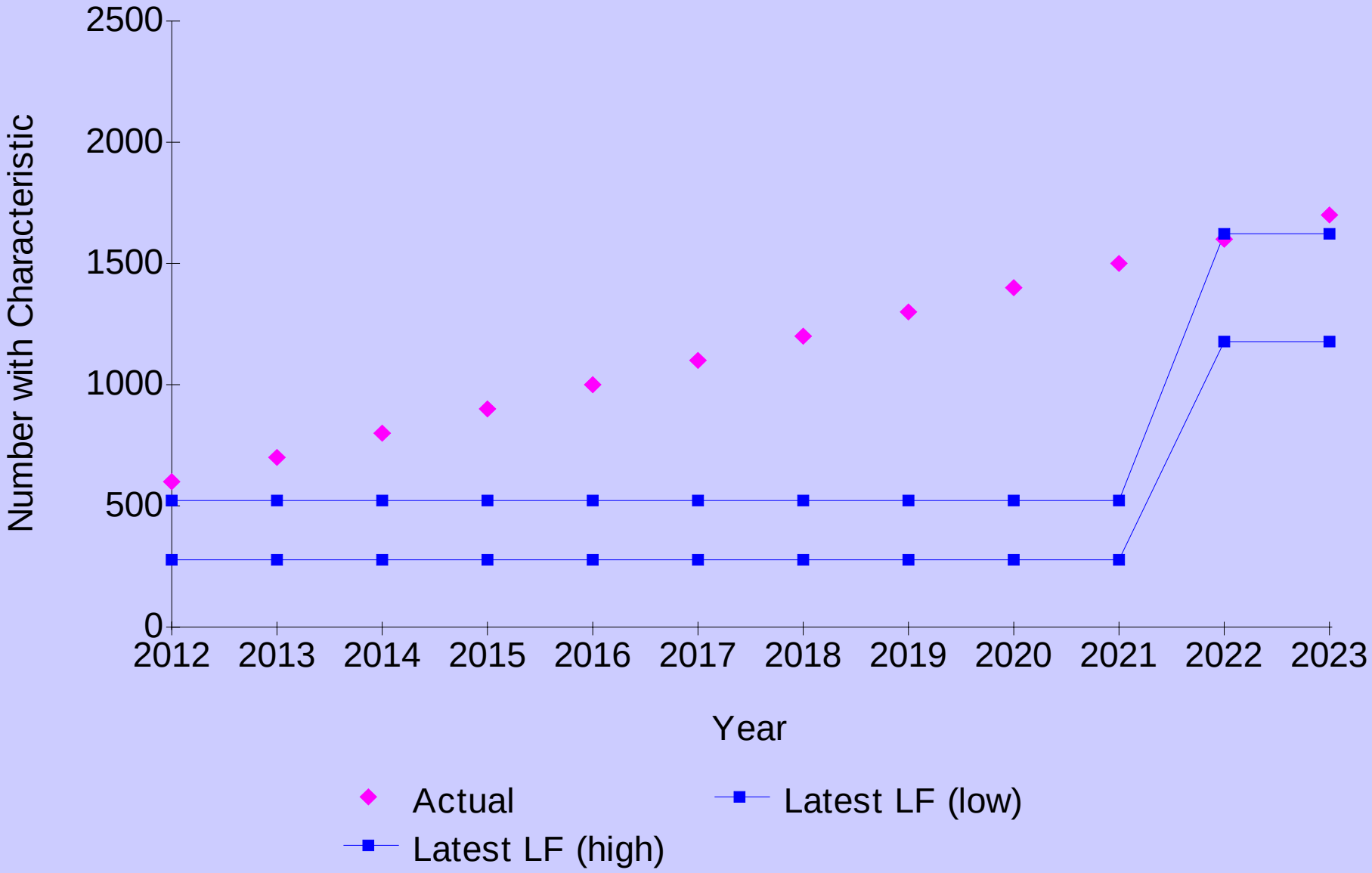
90 Percent Confidence Interval

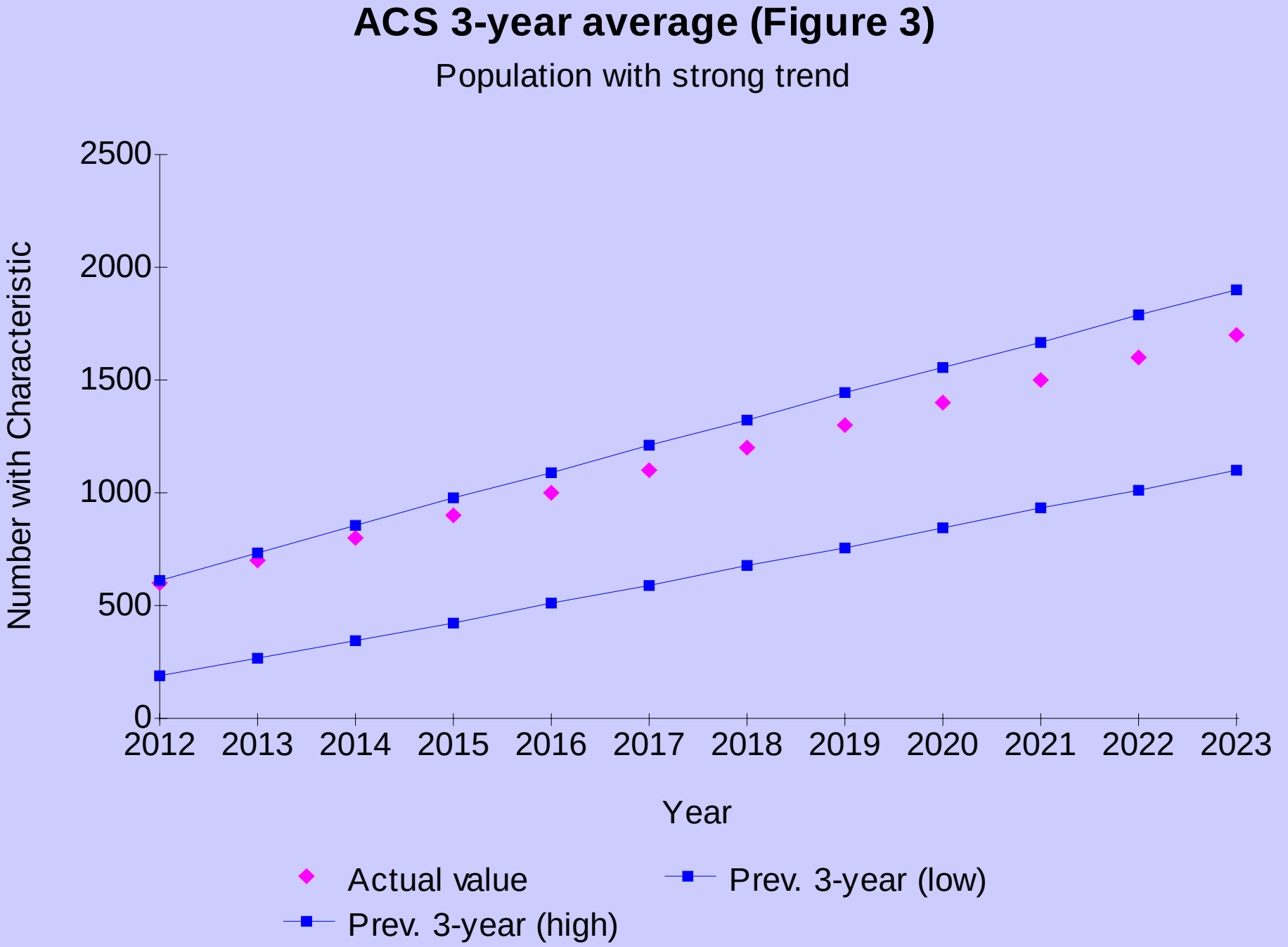
2010 Census Long Form	ACS (2008-12)
280-520	**240- 560**

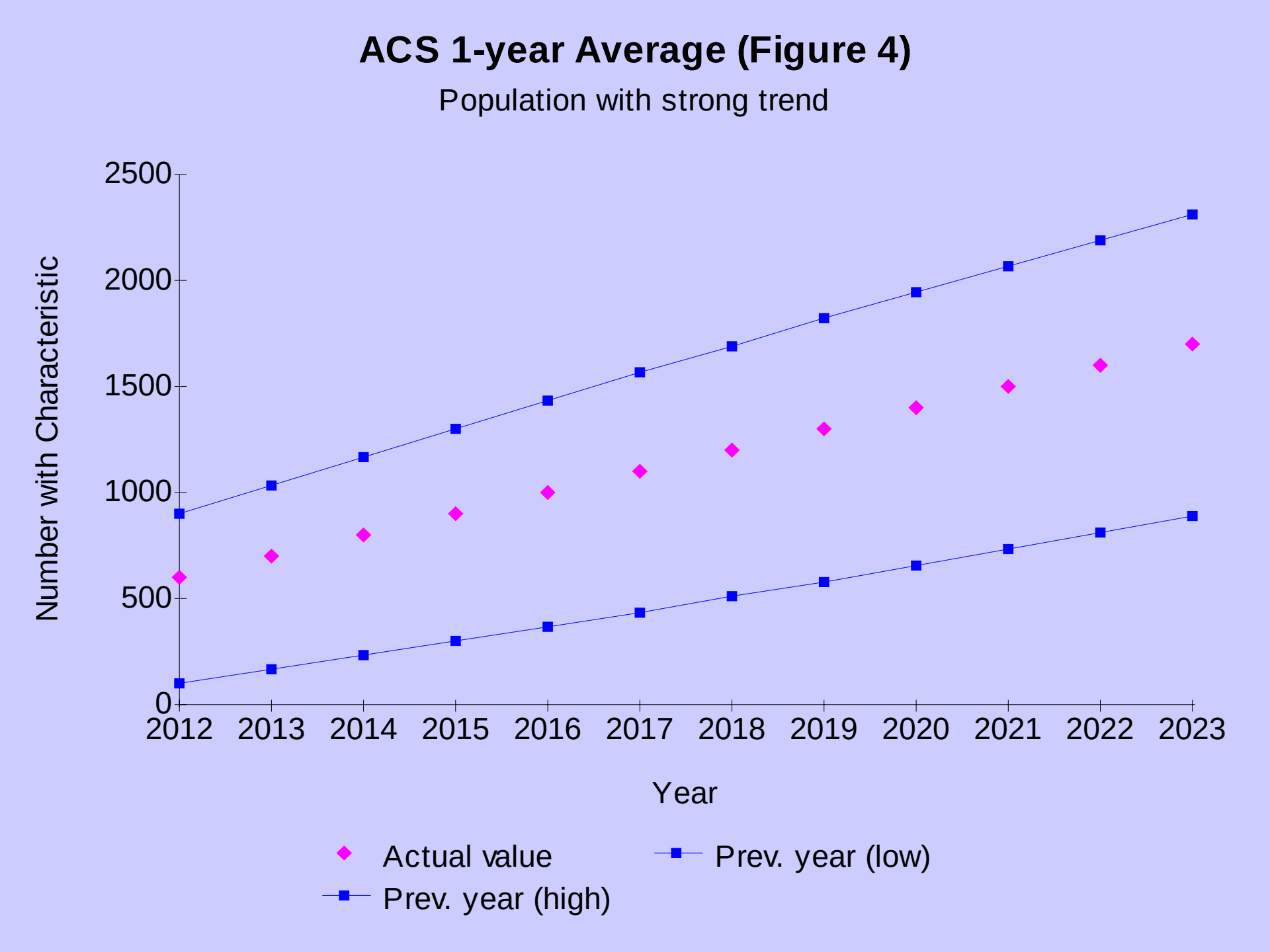

ACS 5-year Average (Figure 1)
Population with Strong Trend
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. 5-year (low)
Prev. 5-year (high)

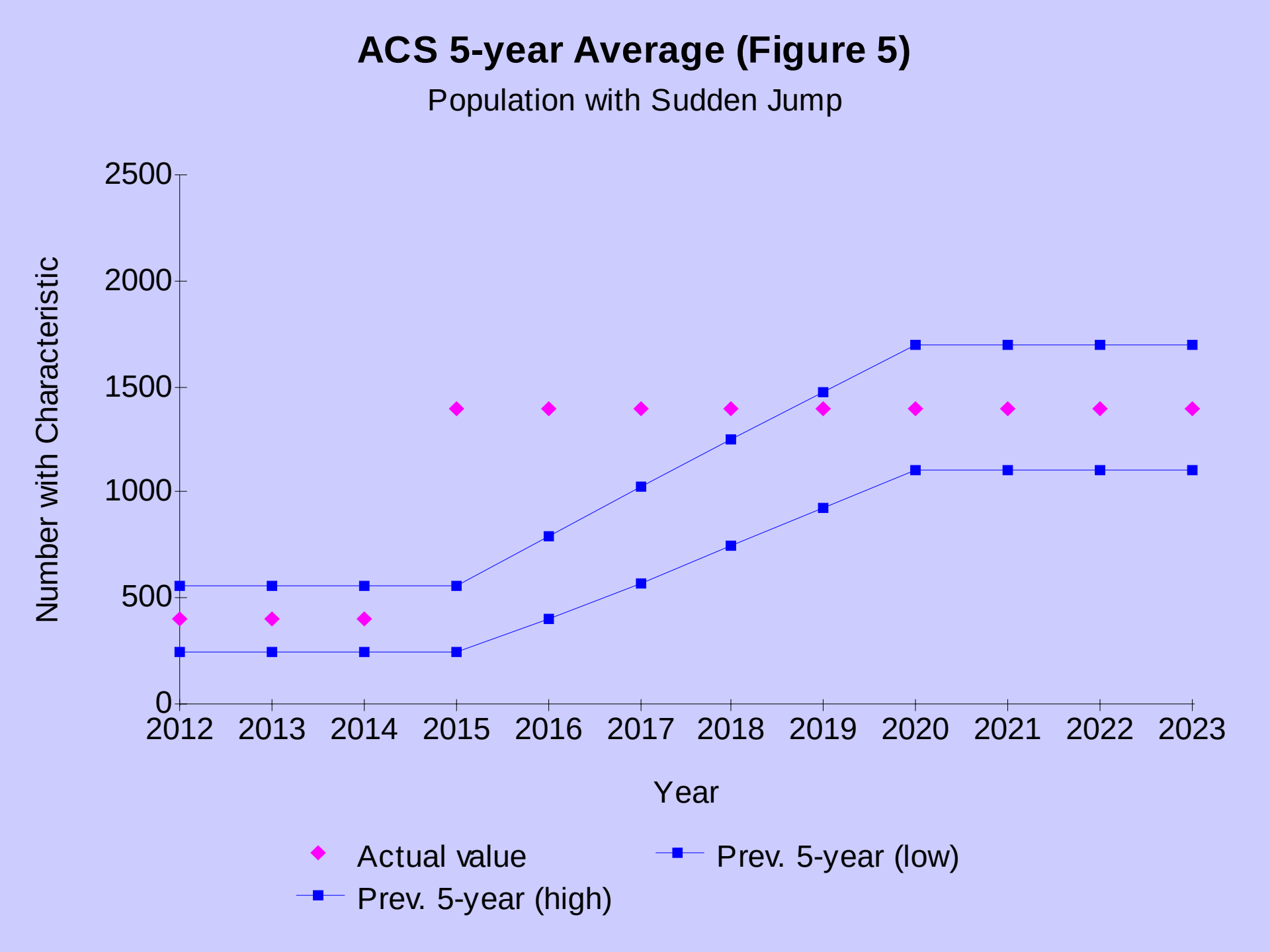
Decennial Long Form (Figure 2)

Population with Strong Trend



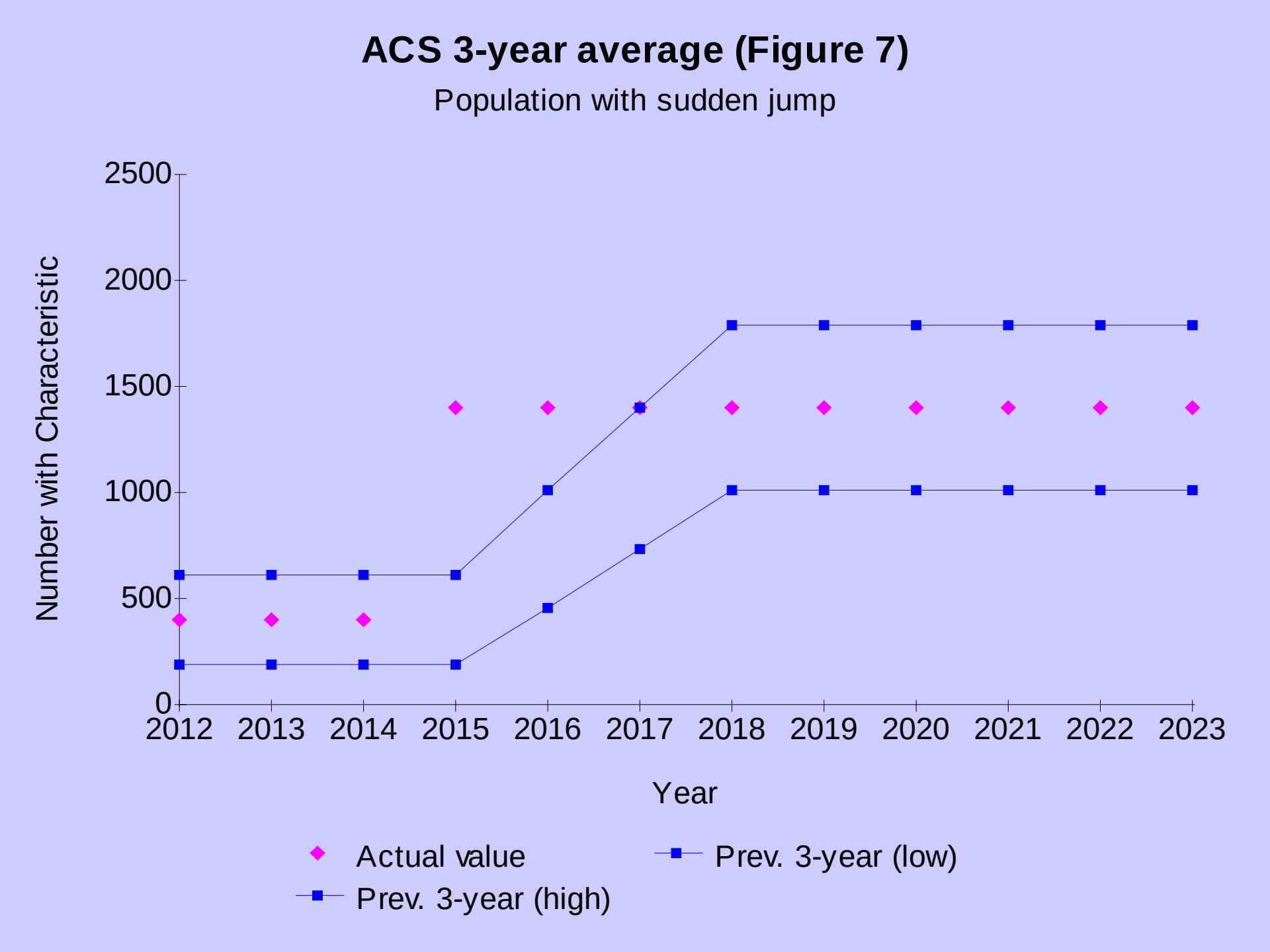

ACS 3-year average (Figure 3)
Population with strong trend
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. 3-year (low)
Prev. 3-year (high)

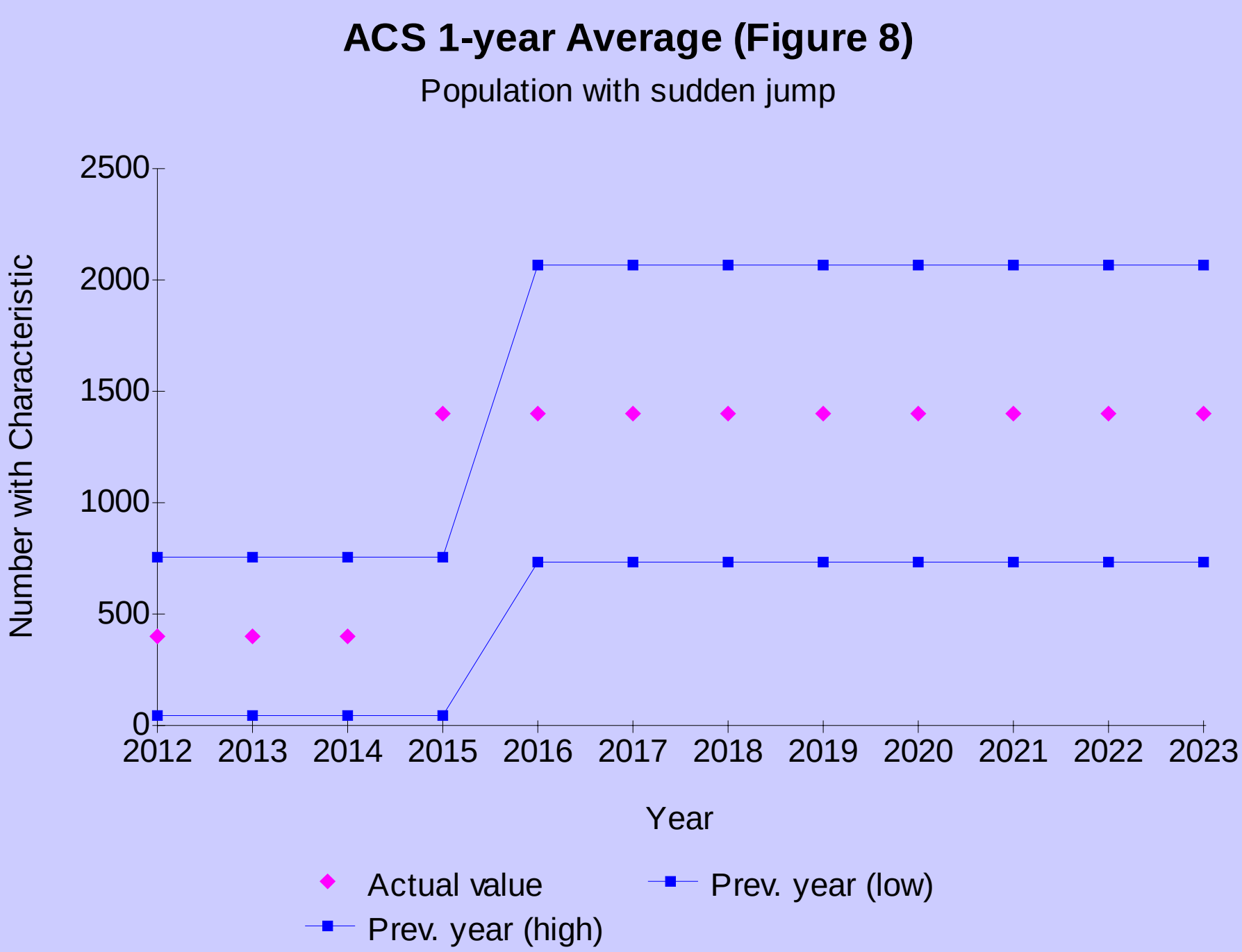

ACS 1-year Average (Figure 4)
Population with strong trend
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. year (low)
Prev. year (high)


ACS 5-year Average (Figure 5)
Population with Sudden Jump
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. 5-year (low)
Prev. 5-year (high)

Decennial Long Form (Figure 6)

Population with Sudden Jump


ACS 3-year average (Figure 7)
Population with sudden jump
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. 3-year (low)
Prev. 3-year (high)


ACS 1-year Average (Figure 8)
Population with sudden jump
Number with Characteristic
2500
2000
1500
1000
500
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Actual value
Prev. year (low)
Prev. year (high)

Issues About Multiple Year Data

- "Decennial snapshot" versus moving average
- Basic argument
  - no issue, if no change over time
  - decennial snapshot is weakest when there is change over time
- Single-year data needed to supplement 5 year averages
- Are there applications where a decennial snapshot is better?

A STEADY TREND

Year(y)	1	2	3	4	5	6	7	8	9	10	11	12
Actual Size	400	420	440	460	480	500	520	540	560	580	600	620
5 year Average	---	---	---	---	---	440	460	480	500	520	540	560
Previous Census	---	---	---	---	---	---	480	480	480	480	480	480

Question #3

- What is the impact of the 1-in-3 sub-sampling of non-respondents in low mail response areas? Does it affect reliability?
- ACS sampling error will be larger than that of the long form
- Overall ACS quality will be comparable to that of the long form

Question #4

- How can a small monthly sample be representative?
- Estimates based on data collected over 60 months are reasonably stable
- The laws of probability provide the basis to calculate the margin of error due to the sampling mechanism

ACS Operational Improvements

- Use of higher sampling rates in small governmental units
- Implement an over-sampling plan in areas with low mail response
- Language program